CLAIMS

1. A method of fabricating field emission sources comprising the steps of:

providing a conductive region having a surface;

depositing elongated emitters onto the surface of the conductive region; and

electrically orientating the emitters so that a first end of the emitter makes an electrical contact with the conductive region while a second end of the emitter is directed away from the surface of the conductive region.

2. A method of fabricating field emission sources as claimed in claim 1 wherein the step of providing a conductive region having a surface includes depositing a conductive material onto a supporting substrate.

3. A method of fabricating field emission sources as claimed in claim 1 wherein the step of depositing elongated emitters onto the surface of the conductive region includes positioning a plurality of high aspect ratio members.

4. A method of fabricating field emission sources as claimed in claim 3 wherein the step of positioning a plurality of high aspect ratio members onto the surface of the conductive region includes positioning members with an aspect ratio in a range of approximately 500 Å to 100,000 Å length and 10 Å to 1000 Å width.

5. A method of fabricating field emission sources as claimed in claim 4 wherein the step of positioning a plurality of high aspect ratio members onto the surface of the conductive region include positioning one of nanotubes, carbon fibers, nanocrystalline graphite, crushed graphite, and metallic threads.

6. A method of fabricating field emission sources as claimed in claim 3 wherein the step of positioning the plurality of high aspect ratio members includes adhering the high aspect ratio members to the conductive region using a conductive binder.

7. A method of fabricating field emission sources as claimed in claim 3 wherein the step of positioning the plurality of high aspect ratio members includes one of dry spraying, wet spraying, growing by means of CVD and using a seed material and electrophoretic deposition.

8. A method of fabricating field emission sources as claimed in claim 1 wherein the step of orientating the emitters includes releasing adherence between the second end of the emitter and the conductive region.

9. A method of fabricating field emission sources as claimed in claim 8 wherein the step of breaking the bond between the second end of the emitter and the conductive region includes adding wave energy to the conductive region.

10. A method of fabricating field emission sources as claimed in claim 8 wherein the step of breaking the bond between the second end of the emitter and the conductive region includes applying a laser beam to the nanotube covered conductive region.

11. A method of fabricating field emission sources as claimed in claim 8 wherein the step of breaking the bond between the second end of the emitter and the conductive region includes using one of an electric field, a magnetic field, and electromagnetic energy.

12. A method of fabricating field emission sources comprising the steps of:

providing a supporting substrate;

depositing a first conductive region on the supporting substrate;

positioning a plurality of emitters onto the first conductive region;

placing a second conductive region over and spaced from the plurality of emitters; and

electrically orientating the plurality of emitters subsequent to placing the second conductive region that the first end of the emitter makes an electrical contact with the first conductive region and the second end of the emitter is generally directed towards the second conductive region.

13. A method of fabricating field emission sources as claimed in claim 12 wherein the step of placing a second conductive region over and spaced from the plurality of emitters includes placing an optically transparent insulator which is coated with indium tin oxide.

14. A method of fabricating field emission sources as claimed in claim 12 wherein the step of positioning a plurality of emitters onto the first conductive region includes positioning high aspect ratio members.

15. A method of fabricating field emission sources as claimed in claim 14 wherein the step of positioning high aspect ratio members includes positioning one of nanotubes, carbon fibers, nanocoralline, crushed graphite, and metallic threads.

16. A method of fabricating field emission sources as claimed in claim 12 wherein the step of orientating the plurality of emitters includes applying a laser beam to the emitters.

17. A method of fabricating field emission sources as claimed in claim 12 wherein the step of orientating the plurality of emitters includes applying an electric field between the first and second conductive regions.

18. A method of fabricating field emission sources comprising the steps of:

providing a conductive region having a surface;

depositing elongated emitters onto the surface of the conductive region;

partially dislodging the emitters without making mechanical contact with the emitters so that a first end of each of the plurality of emitters makes an electrical contact with the conductive region; and

activating the plurality of emitters to direct a second end of each of the emitters away from the surface of the conductive region.

19. A method of fabricating field emission sources as claimed in claim 18 wherein the step of activating the plurality of emitters includes using one of a surface wave, an electric field, a magnetic field, and electromagnetic energy.

20. A field emission source comprising:

a first conductive region;

a plurality of high aspect ratio members deposited onto the first conductive region;

a second conductive region placed over and spaced from the plurality of high aspect ratio members; and

a control means to electrically orientate the plurality of high aspect ratio members in a direction away from the first conductive region without making mechanical contact with the plurality of high aspect ratio members.

21. A field emission source as claimed in claim 20 wherein the plurality of high aspect ratio members is one of nanotubes, carbon fibers, nanocoralline, crushed graphite, and metallic threads.

22. A field emission source as claimed in claim 21 wherein the second conductive region is comprised of an insulating material coated with a conductive layer.

23. A field emission source as claimed in claim 20 wherein the control means to orientate the plurality of high aspect ratio members in a direction away from the first conductive region includes one of applying a laser beam, applying an electric field, applying a magnetic field, and applying an electromagnetic field to the high aspect ratio members.